

What is claimed is:

1. An image signal repeater apparatus comprising:
  - an image signal receiving section which receives a composite image signal, comprising an image signal composed of multiple frames and a synchronization signal corresponding to said image signal, and then outputs each signal;
  - a clock replacing section which replaces a clock signal which is based on a synchronization signal corresponding with an image signal output by said image signal receiving section, with an internally generated replacement clock signal, and recovers an input image signal using the replacement clock signal; and
  - an image signal transmission section which converts the recovered image signal output from said clock replacing section, to a digital transmission signal, and outputs the converted signal.
2. An image signal repeater apparatus according to claim 1, wherein said clock replacing section comprises:
  - a signal measurement device which measures the characteristics of the input image signal,
  - a signal determination device which based on the results from said signal measurement device determines a frequency for the replacement clock signal to recover the image signal,
  - a clock generation device which generates a replacement clock signal for recovering the image signal according to the results of said signal determination device, and

an image signal recovery device which recovers the input image signal using the replacement clock signal generated by said clock generation device.

3. An image signal repeater apparatus according to claim 2, wherein said image signal recovery device comprises;

a memory device which stores an image signal,

a memory write device which writes the image signal to said memory device in synchronization with a clock signal which is based on the synchronization signal corresponding with the image signal, and

a memory read device which reads the image signal from said memory device in synchronization with a replacement clock signal generated by said clock generation device.

4. An image signal repeater apparatus according to claim 3, wherein a reduction in a dot clock is realized by reducing a total number of dots when read from memory relative to a total number of horizontal dots when written to memory by said image signal recovery device.

5. An image signal repeater apparatus according to claim 1, wherein said clock replacing section comprises;

a signal measurement device which measures the characteristics of the input image signal,

a signal determination device which based on the results from said signal measurement device determines the frequency of a replacement clock signal for recovering the image signal,

a clock generation device which generates a replacement clock signal for image signal recovery according to the results of said signal determination device,

an image signal recovery device which recovers an input image signal using the replacement clock generated by said clock generation device, and

a phase difference detection device which detects a phase difference between the input image signal and the recovered image signal, and outputs a control signal corresponding to the phase difference.

6. An image signal repeater apparatus according to claim 5, which controls based on the results of said phase difference detection section so as to reduce the phase difference, by adjusting the total number of horizontal dots or the total number of vertical lines so as to eliminate any generated phase difference.

7. An image signal repeater apparatus according to claim 2, wherein said clock generation device comprises:

a phase comparison device which compares a phase of the input synchronization signal and a phase of a signal corresponding to the replacement clock signal;

a clock oscillation device which oscillates the replacement clock signal produced in accordance with the results of said phase comparison device; and

a frequency dividing device which divides the replacement clock signal generated in said clock oscillation device and transmits the result to said phase comparison device,

and phase comparison is only performed by said phase comparison device within blanking periods, where there is no image data.

8. A method of controlling the image signal repeater apparatus according to claim 2, wherein said clock generation device comprises:

a phase comparison device which compares a phase of the input synchronization signal and a phase of a signal corresponding to the replacement clock signal;

a clock oscillation device which oscillates the replacement clock signal produced in accordance with the results of said phase comparison device; and

a frequency dividing device which divides the replacement clock signal generated in said clock oscillation device and transmits the result to said phase comparison device,

and phase comparison is only performed by said phase comparison device within blanking periods, where there is no image data.

9. An image display apparatus comprising:

an image signal receiving section which receives a composite image signal, comprising an image signal composed of multiple frames and a synchronization signal corresponding to said image signal, and then outputs each signal;

a clock replacing section which replaces a clock signal which is based on a synchronization signal corresponding with an image signal output by said image signal receiving section, with an internally generated replacement clock signal, and recovers an input image signal using the replacement clock signal;

an image signal display section which displays the image signal output from said clock replacing section, on an image display device, and

an image signal transmission section which converts the recovered image signal output from said clock replacing section, to a digital transmission signal, and outputs the converted signal.

10. An image display apparatus according to claim 9, wherein said clock replacing section comprises;

a signal measurement device which measures the characteristics of the input image signal,

a signal determination device which based on the results from said signal measurement device determines a frequency for the replacement clock signal to recover the image signal,

a clock generation device which generates a replacement clock signal for recovering the image signal according to the results of said signal determination device, and

an image signal recovery device which recovers the input image signal using the replacement clock signal generated by said clock generation device.

11. An image display apparatus according to claim 10, wherein said image signal recovery device comprises;

a memory device which stores an image signal,

a memory write device which writes the image signal to said memory device in synchronization with a clock signal which is based on the synchronization signal corresponding with the image signal, and

a memory read device which reads the image signal from said memory device in synchronization with a replacement clock signal generated by said clock generation device.

12. A method of controlling the image display apparatus according to claim 11, wherein a reduction in a dot clock is realized by reducing a total number of dots when read

from memory relative to a total number of horizontal dots when written to memory by said image signal recovery device.

13. An image display apparatus according to claim 9, wherein said clock replacing section comprises;

a signal measurement device which measures the characteristics of the input image signal,

a signal determination device which based on the results from said signal measurement device determines the frequency of a replacement clock signal for recovering the image signal,

a clock generation device which generates a replacement clock signal for image signal recovery according to the results of said signal determination device,

an image signal recovery device which recovers an input image signal using the replacement clock generated by said clock generation device, and

a phase difference detection device which detects a phase difference between the input image signal and the recovered image signal, and outputs a control signal corresponding to the phase difference.

14. A method of controlling the image display apparatus according to claim 13, which controls based on the results of said phase difference detection section so as to reduce the phase difference, by adjusting the total number of horizontal dots or the total number of vertical lines so as to eliminate any generated phase difference.

15. An image display apparatus according to claim 10, wherein said clock generation device comprises:

a phase comparison device which compares a phase of the input synchronization signal and a phase of a signal corresponding to the replacement clock signal;

a clock oscillation device which oscillates the replacement clock signal produced in accordance with the results of said phase comparison device; and

a frequency dividing device which divides the replacement clock signal generated in said clock oscillation device and transmits the result to said phase comparison device, and phase comparison is only performed by said phase comparison device within blanking periods, where there is no image data.

16. A method of controlling the image display apparatus according to claim 10, wherein said clock generation device comprises:

a phase comparison device which compares a phase of the input synchronization signal and a phase of a signal corresponding to the replacement clock signal;

a clock oscillation device which oscillates the replacement clock signal produced in accordance with the results of said phase comparison device; and

a frequency dividing device which divides the replacement clock signal generated in said clock oscillation device and transmits the result to said phase comparison device, and phase comparison is only performed by said phase comparison device within blanking periods, where there is no image data.